

Claims

What is claimed is:

1. A system for performing inventory control, comprising:  
one or more inventories adapted to store at least one of wafers,  
unpackaged circuits and packaged circuits, where the wafers are suitable for processing  
into integrated circuits, and where at least one of the wafers, the unpackaged circuits and  
the packaged circuits are marked with one or more barcodes;  
one or more barcode readers operable to read one or more barcodes on at least one  
of the wafers, the unpackaged circuits and the packaged circuits; and  
one or more sorters adapted to route one or more wafers, unpackaged circuits  
and/or packaged circuits to one or more inventories based, at least in part, on information  
encoded by the one or more barcodes.
2. The system of claim 1, wherein the barcodes are formatted according to at least  
one of, three of nine format, code ninety three format, interleaved code two of five  
format, code one twenty eight format, Colorado barcode format and two-dimensional  
format.
3. The system of claim 1, further comprising one or more transporters adapted to  
move one or more wafers, unpackaged circuits and packaged circuits between the one or  
more inventories, the one or more barcode readers and the one or more sorters.
4. The system of claim 1, wherein:  
at least one of the one or more inventories is partitioned into one or more  
addressable locations;  
at least one of the one or more inventories is operable to selectively retrieve an  
individual designated wafer, unpackaged circuit and/or packaged circuit from an  
addressable location; and

at least one of the one or more inventories is further operable to selectively deposit an individual designated wafer, unpackaged circuit and/or packaged circuit in an addressable location.

5. The system of claim 1, wherein:

at least one of the one or more inventories is partitioned into one or more addressable locations;

at least one of the one or more inventories is adapted to selectively retrieve one or more groups of designated wafers, unpackaged circuits and packaged circuits from one or more addressable locations; and

at least one of the one or more inventories is further adapted to selectively deposit groups of designated wafers, unpackaged circuits and packaged circuits in one or more addressable locations.

6. The system of claim 1, wherein the sorter is adapted to selectively route one or more wafers, unpackaged circuits and/or packaged circuits to one or more inventories based on at least one of age, location, supplier, stage of manufacturer and defect information.

7. The system of claim 1, further comprising:

one or more manufacturing devices adapted to perform one or more manufacturing processes on at least one of the wafers, the unpackaged circuits and/or the packaged circuits; and

where the one or more one or more sorters are further adapted to route at least one of wafers, unpackaged circuits and/or packaged circuits to the one or more manufacturing devices based, at least in part, on information encoded by the one or more barcodes..

8. The system of claim 7, wherein the one or more manufacturing devices include at least one of, a stepper and a spin track.

9. The system of claim 8, further comprising:

one or more feedback systems adapted to receive feedback information from at least one of the one or more barcode readers, the one or more sorters and the one or more manufacturing devices, the one or more feedback systems adapted to generate control information that can be fed forward to at least one of the one or more barcode readers, the one or more sorters and the one or more manufacturing devices.

10. The system of claim 1, further comprising:

one or more inventory control data stores, at least one of the one or more inventory control data stores operably connected to at least one of the one or more barcode readers, to at least one of the one or more sorters and to at least one of the one or more inventories.

11. The system of claim 10, the one or more inventory control data stores comprising at least one of a database, an array, a table, a stack, a queue, a list and a file.

12. The system of claim 11, wherein the one or more inventory control data stores are operably connected to at least one of the one or more manufacturing devices.

13. The system of claim 11, wherein the one or more inventory control data stores are operably connected to at least one of the one or more feedback systems.

14. A system for performing inventory control comprising:

one or more inventories adapted to store at least one of wafers, unpackaged circuits and packaged circuits, where the wafers are suitable for processing into integrated circuits and where at least one of the wafers, the unpackaged circuits and the packaged circuits are marked with one or more barcodes;

one or more barcode readers operable to read one or more barcodes on the wafers, unpackaged circuits and packaged circuits;

one or more manufacturing devices adapted to perform one or more manufacturing processes on the wafers, unpackaged circuits and packaged circuits;

one or more sorters adapted to route wafers, unpackaged circuits and/or packaged circuits to at least one of the one or more inventories and the one or more manufacturing devices based, at least in part, on information encoded by the one or more barcodes;

one or more feedback systems adapted to receive feedback information from at least one of the one or more barcode readers, the one or more sorters and the one or more manufacturing devices, the one or more feedback systems adapted to generate control information that can be fed forward to at least one of the one or more barcode readers, the one or more sorters and the one or more manufacturing devices; and

one or more Electronic Data Interchange (EDI) systems adapted to transmit one or more EDI data to one or more EDI data destinations, the one or more EDI data being generated by at least one of the one or more barcode readers, the one or more inventories, the one or more sorters, the one or more manufacturing devices and the one or more feedback systems.

15. The system of claim 14, the one or more EDI data including at least one of ordering information, defect information and delivery information.

16. A method for performing inventory control, comprising:  
retrieving a wafer from a wafer store, the wafer being suitable for processing into integrated circuits;  
reading a barcode on the wafer; and  
sending the wafer to a wafer destination based, at least in part, on information encoded in the barcode.

17. The method of claim 16, wherein retrieving a wafer from a wafer store comprises:  
identifying a wafer store from which to retrieve a wafer;  
identifying a wafer to retrieve from the data store; and  
moving the wafer from the wafer store to a barcode reader.

18. The method of claim 17, wherein sending a wafer to wafer store comprises:  
identifying a wafer store to which to route a wafer;  
identifying a wafer to route to the data store; and  
moving the wafer to the data store.
19. The method of claim 18, further comprising:  
accessing stored data associated with information encoded on a barcode on a wafer; and  
controlling one or more behaviors of one or more wafer destinations based at least in part on accessing the stored data.
20. The method of claim 19, wherein the stored data includes at least one of, wafer age, wafer location, wafer manufacturer, stage of wafer processing completed, next stage of wafer processing to be performed and wafer defects.
21. The method of claim 16, further comprising:  
accepting feedback information from the one or more wafer destinations.
22. The method of claim 21, wherein the feedback information includes at least one of, wafer source status information and wafer destination status information.
23. The method of claim 22, wherein the wafer source status information includes at least one of an availability of a wafer source, a capacity of a wafer source, an identifier of a wafer in a wafer source and a count of wafers in a wafer source.
24. The method of claim 22, wherein the wafer destination status information includes at least one of an availability of a wafer destination, a capacity of a wafer destination, an identifier of a wafer in a wafer destination and a count of wafers in a wafer destination.

25. The method of claim 21, further comprising:  
generating control information based on the feedback information, the control information employable to adapt the behavior of at least one of the wafer sources ~~and/or~~ at least one of the wafer destinations.

26. The method of claim 16 further comprising:  
collecting information from the one or more wafer stores; and  
sending information to the one or more wafer destinations.

27. A computer readable medium containing computer executable instructions operable to perform a method for performing inventory control, comprising:  
retrieving a wafer from a wafer store, the wafer being suitable for processing into integrated circuits;  
reading a barcode on the wafer; and  
sending the wafer to a wafer destination based, at least in part, on information encoded in the barcode.

28. A method for tracking integrated circuits fabricated from wafers, comprising:  
marking a wafer with a first barcode, the wafer suitable for processing into integrated circuits, the first barcode encoding a wafer information;  
storing the wafer information and data sufficient to relate the wafer information to the first barcode in a barcode data store;  
marking an integrated circuit being fabricated on the wafer with one or more second barcodes, the second barcodes encoding information sufficient to identify the wafer from which the integrated circuit was fabricated by relating the second barcodes to at least one of the first barcode and the wafer information, the second barcodes further encoding a fabrication information related to the fabrication of the integrated circuit;  
storing the fabrication information and data sufficient to relate the fabrication information to the one or more second barcodes in the barcode data store;

marking a packaged integrated circuit fabricated from the wafer with one or more third barcodes, the third barcodes encoding information sufficient to identify the wafer from which the packaged integrated circuit was fabricated by relating the third barcodes to at least one of the first barcode, the wafer information stored in the data store, the one or more second barcodes and the fabrication information stored in the data store, the third barcodes further encoding a packaging information related to the packaging of the integrated circuit; and

storing the packaging information and data sufficient to relate the packaging information to the one or more third barcodes in the barcode data store.

29. The method of claim 28, wherein the wafer information comprises at least one of wafer manufacturer, wafer thickness, wafer diameter, date of first processing, apparatus employed in processing the wafer, reticles employed in processing the wafer, wafer composition and a wafer identifier.

30. The method of claim 29, wherein the fabrication information comprises at least one of wafer manufacturer, wafer thickness, wafer diameter, date of first processing, apparatus employed in processing the wafer, wafer composition, integrated circuit manufacturer, apparatus employed in fabricating the integrated circuit, reticles employed in fabricating the integrated circuit, fabrication steps performed on the integrated circuit, date of fabrication, position on the wafer, an integrated circuit identifier and the wafer identifier.

31. The method of claim 30, wherein the packaging information comprises at least one of wafer manufacturer, wafer thickness, wafer diameter, date of first processing, apparatus employed in processing the wafer, wafer composition, integrated circuit manufacturer, apparatus employed in fabricating the integrated circuit, reticles employed in fabricating the integrated circuit, date of fabrication, position on the wafer, apparatus employed in packaging the integrated circuit, packaging date, the integrated circuit identifier, the wafer identifier and a packaging identifier.

32. A method for performing inventory control, comprising:  
generating Electronic Data Interchange (EDI) data associated with one or more wafers, the wafers being suitable for processing into integrated circuits; and  
transmitting the EDI data to one or more suppliers of the wafers.

33. The method of claim 32, the EDI data including at least one of, a number of wafers received, a number of wafers processed, a number of wafers with defects, a number of wafers to be purchased and a number of wafers to be returned.

34. The method of claim 33, the EDI data including at least one of, the identity of one or more wafers processed, a list of manufacturing stages through which one or more wafers processed have passed, the identity of one or more wafers with defects, the identity of one or more wafers purchased and received and the identity of one or more wafers to be returned to the suppliers.

35. A data packet adapted to be transmitted between two or more computer processes, the data packet containing information related to inventory control data encoded in one or more barcodes on a wafer, the wafer suitable for processing into integrated circuits.

36. A data packet adapted to be transmitted between two or more computer processes, the data packet containing feedback information related to inventory control of wafers suitable for processing into integrated circuits.